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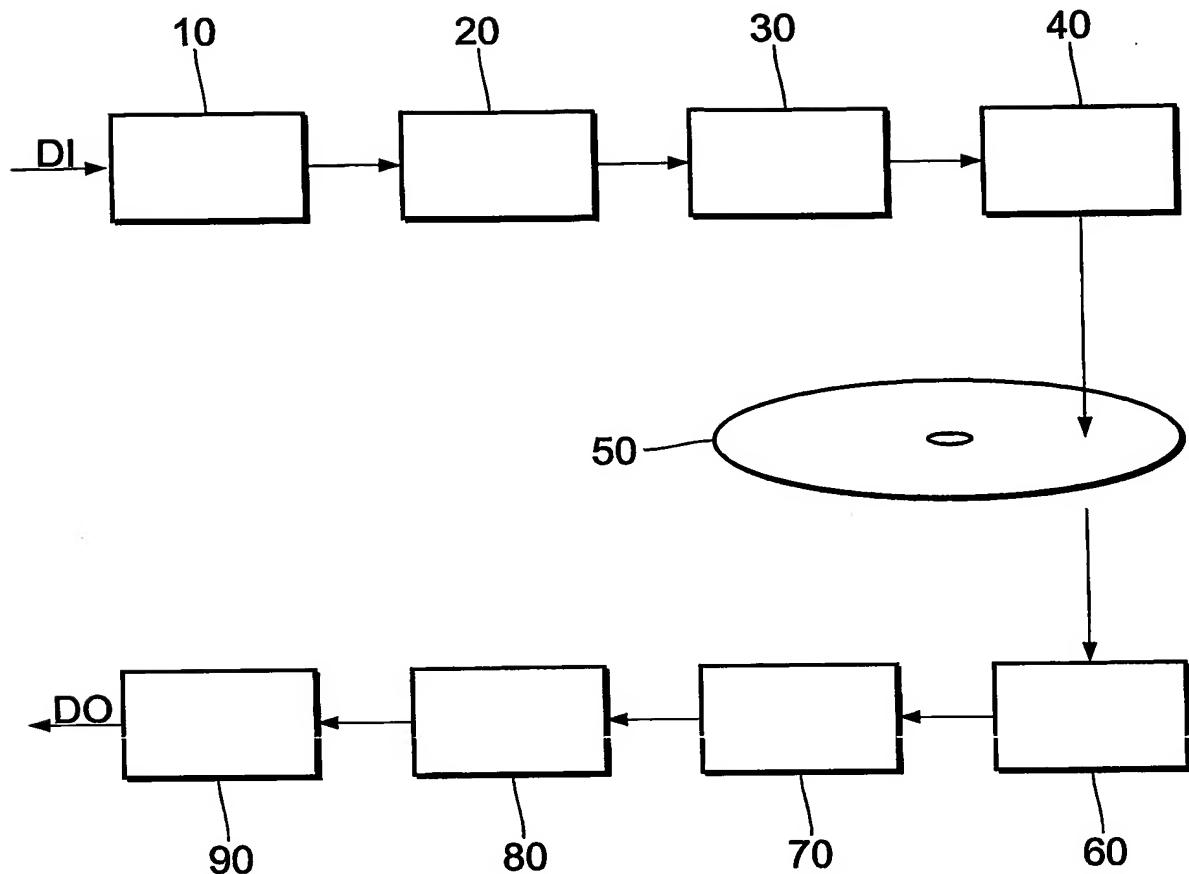


FIG.1

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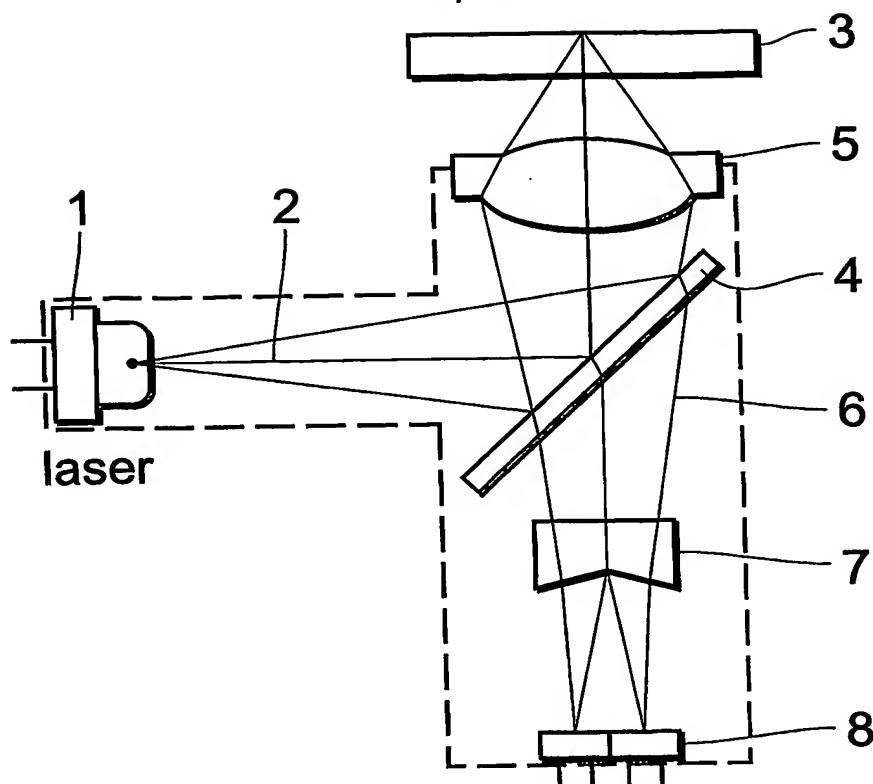


FIG.2

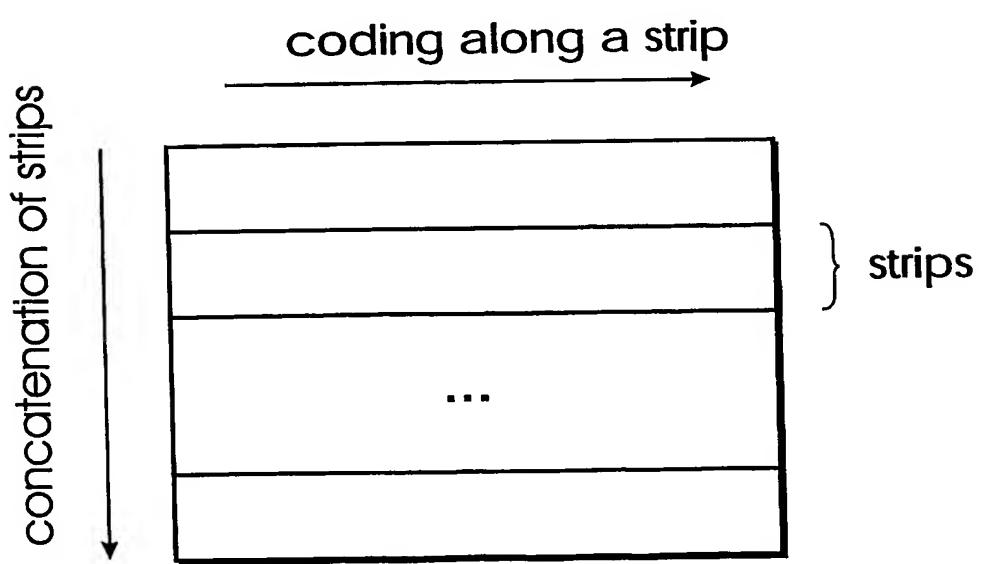


FIG.3

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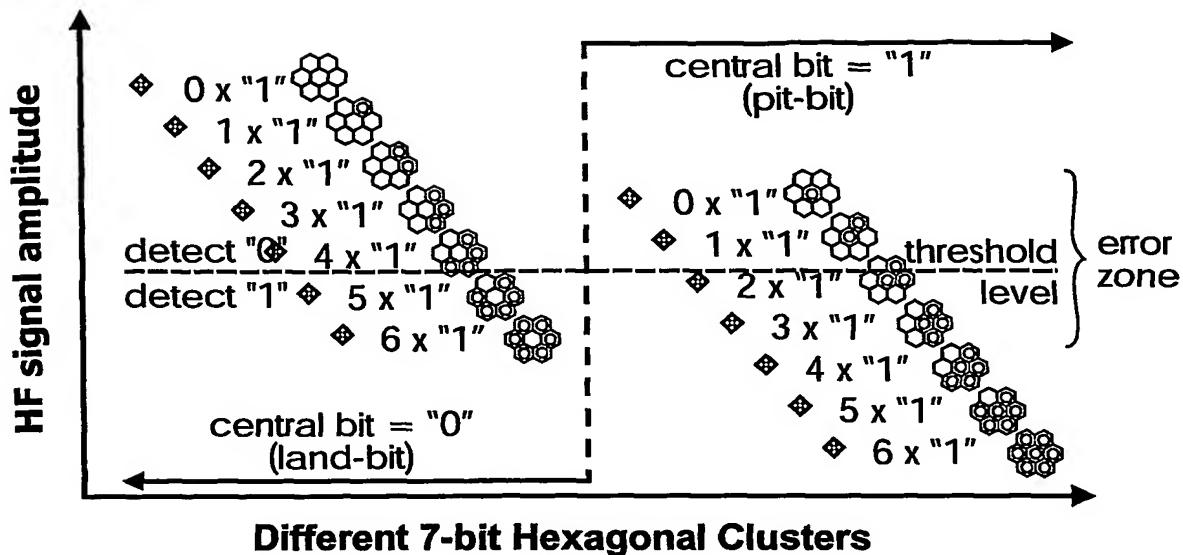
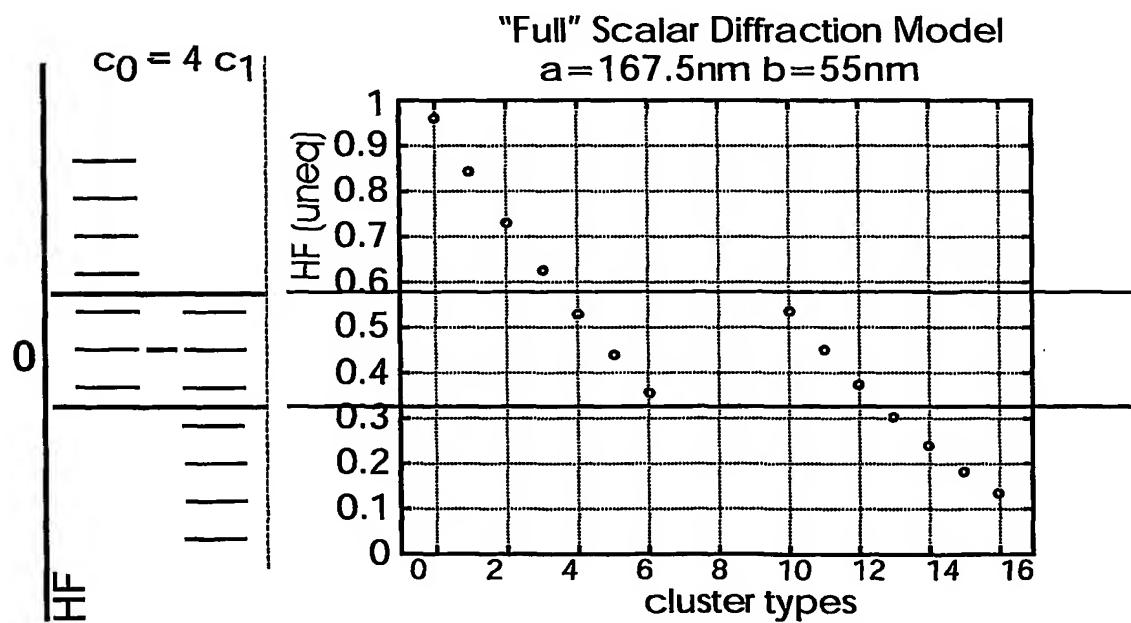


FIG.4



$$a_{\text{Hex-2D}} = 167.5 \text{ nm} \quad S_{2D} \text{ <user bit>} = 0.4281 [\lambda / (2NA)]^2$$

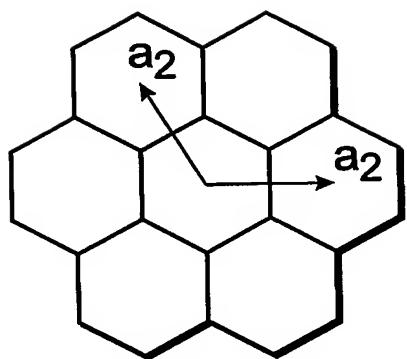
$$S_{\text{DVR}} \text{ <user bit>} = 0.6343 [\lambda / (2NA)]^2$$

$$\times 1.48$$

$$\times 11/12 = 1.36$$

FIG.5

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$$\begin{array}{ll} a_1 = [10] & |a_1| = 1 \\ a_2 = [01] & |a_2| = 1 \end{array}$$

FIG.6a

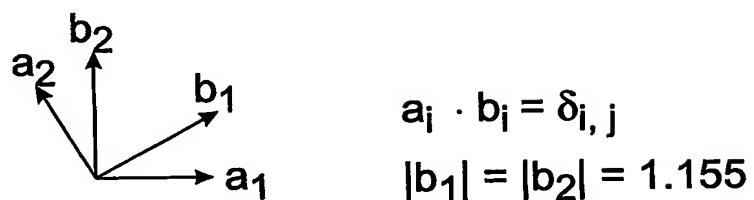


FIG.6b

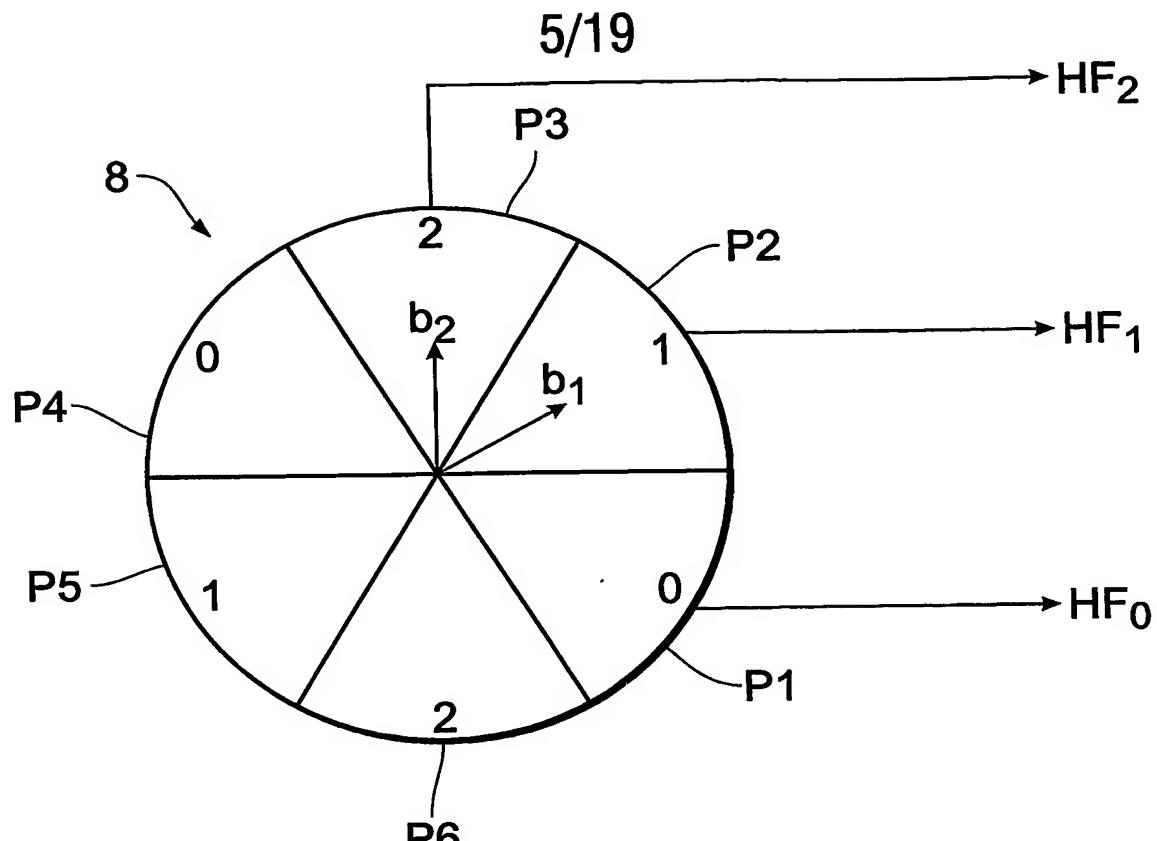
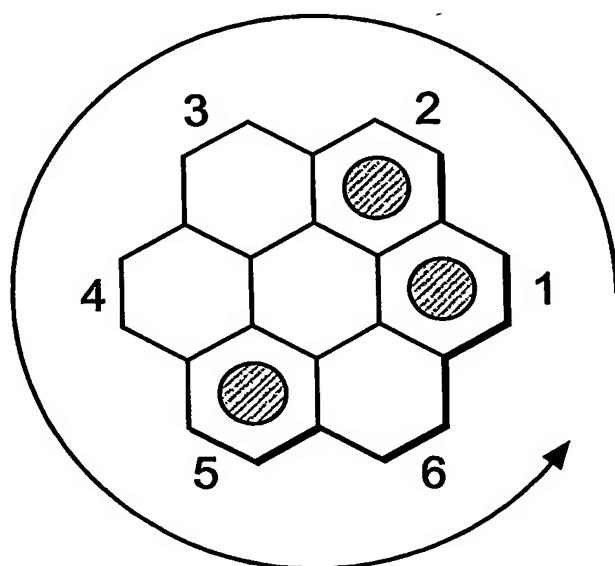


FIG.7



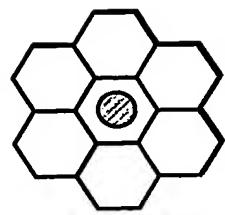
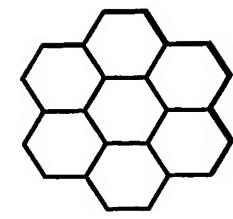
[1 1 0 0 1 0]

FIG.8

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rotation multiplicity
inversion multiplicity

$n = 0$
 $b_0 = 0$
PAT_01



$b_0 = 1$
PAT_01

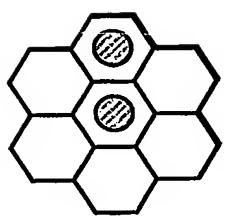
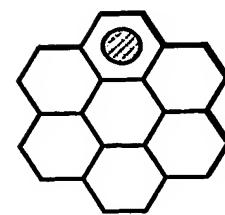
FIG.9

[0 0 0 0 0 0]

total nr of patterns = 1

 $n = 1$

$b_0 = 0$
PAT_02

 $b_0 = 1$

$x2$
 $x3$

total nr of patterns = 6

FIG.10

[1 0 0 0 0 0]

$x1$

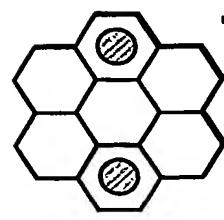
 $x1$

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rotation multiplicity
inversion multiplicity

$n = 2$

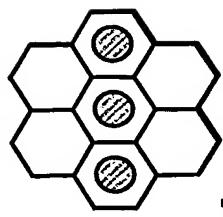
$b_0 = 0$



[1 0 0 1 0 0]

PAT_03

$b_0 = 1$

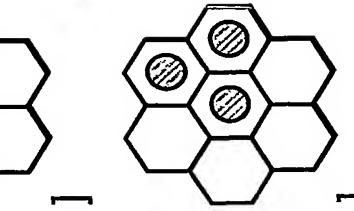


[1 0 0 1 0 0]

PAT_04

$x3$
 $x1$

PAT_05



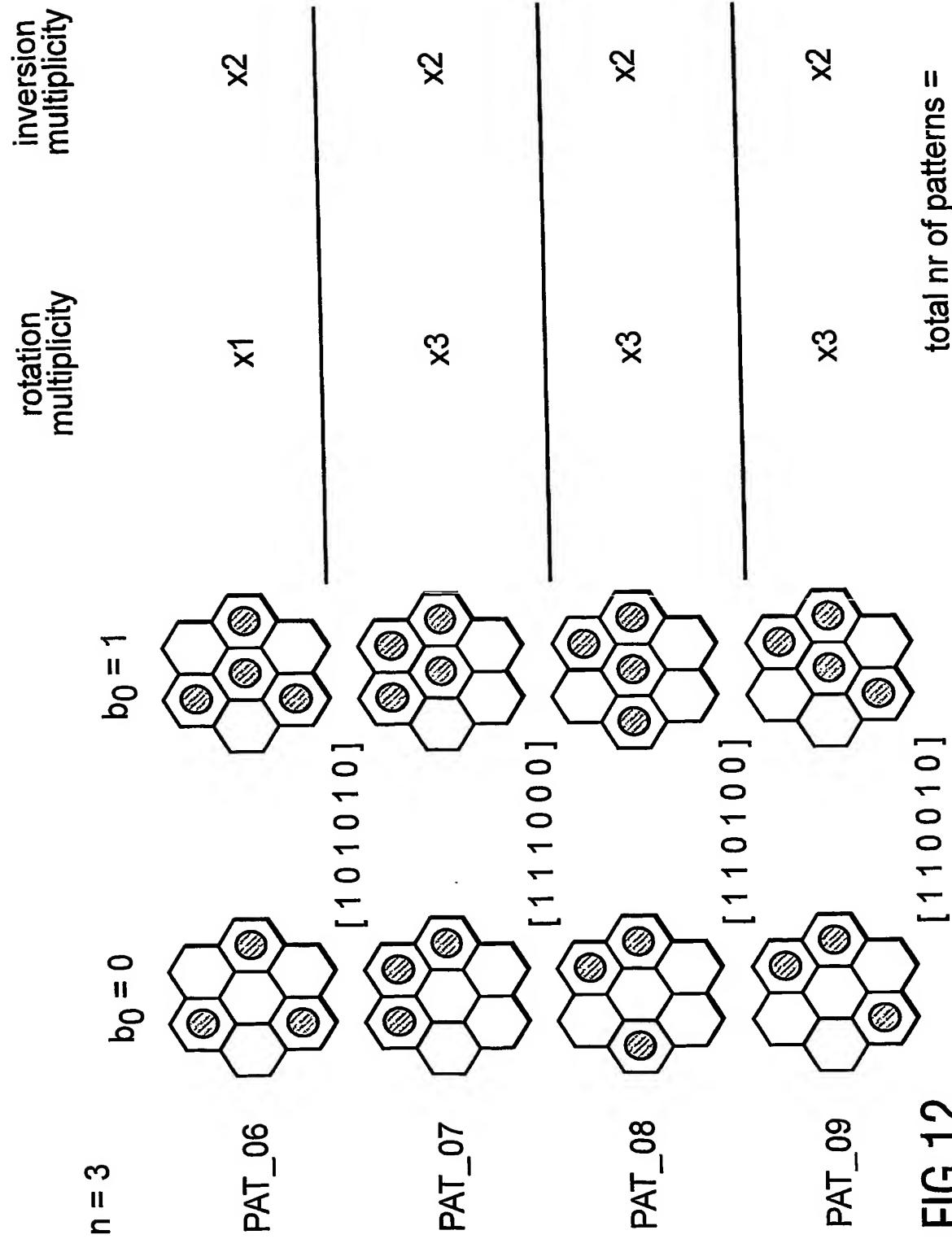
[1 1 0 0 0 0]

$x3$
 $x2$

total nr of patterns = 15

FIG. 11

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**FIG. 12**

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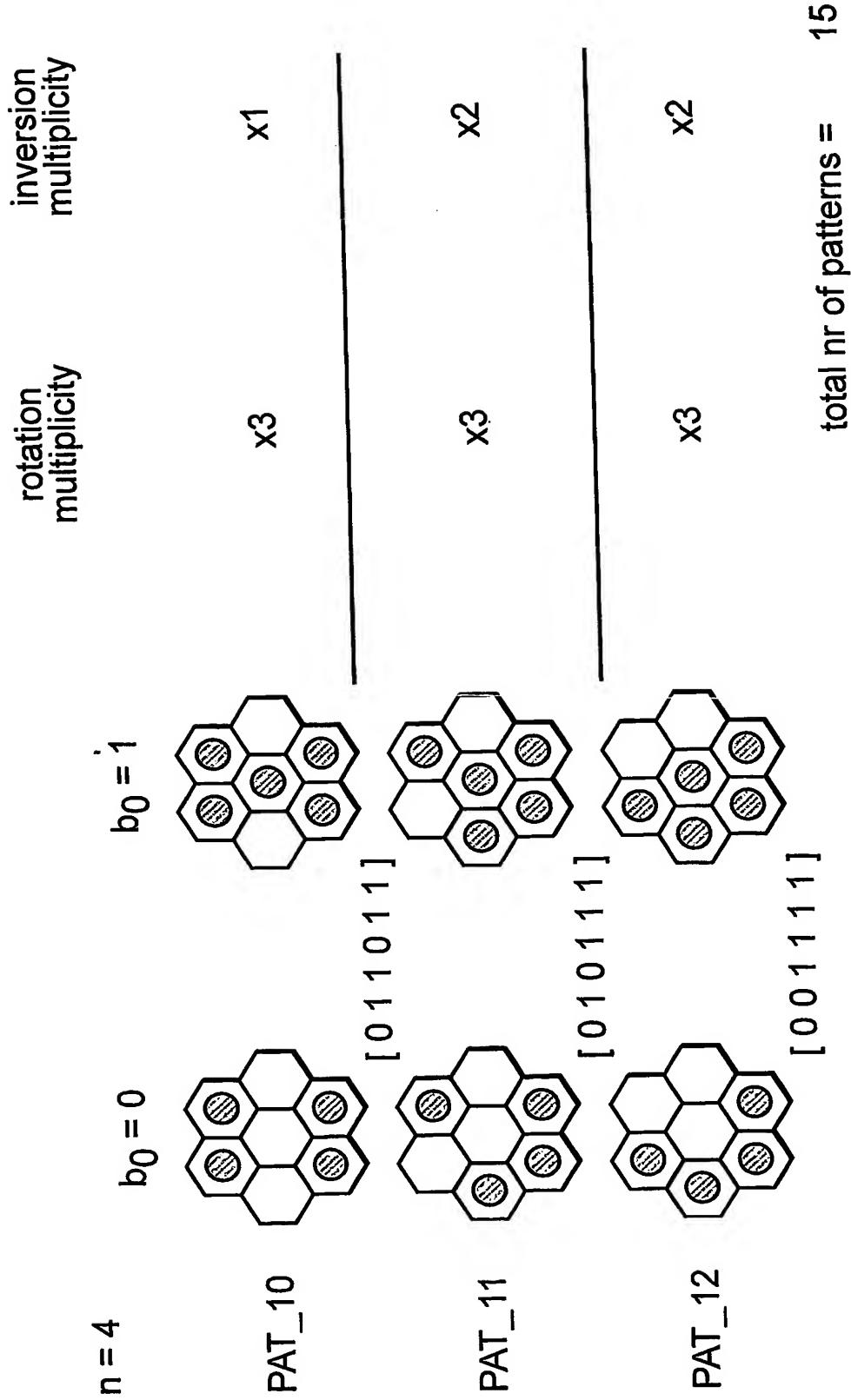


FIG. 13

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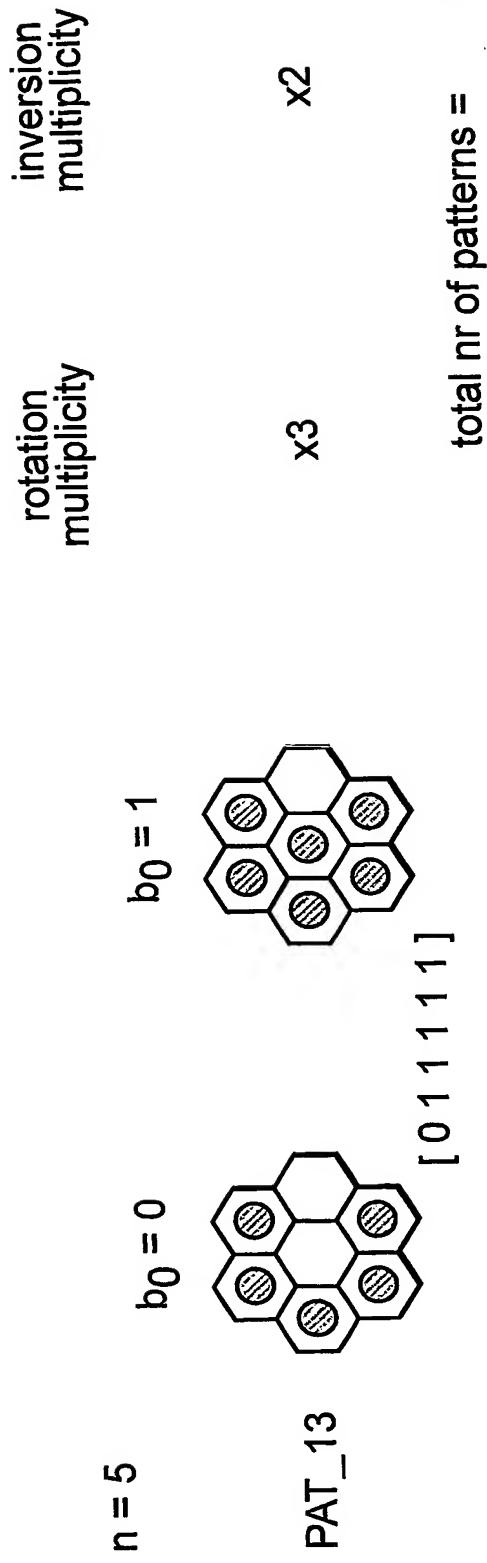


FIG.14

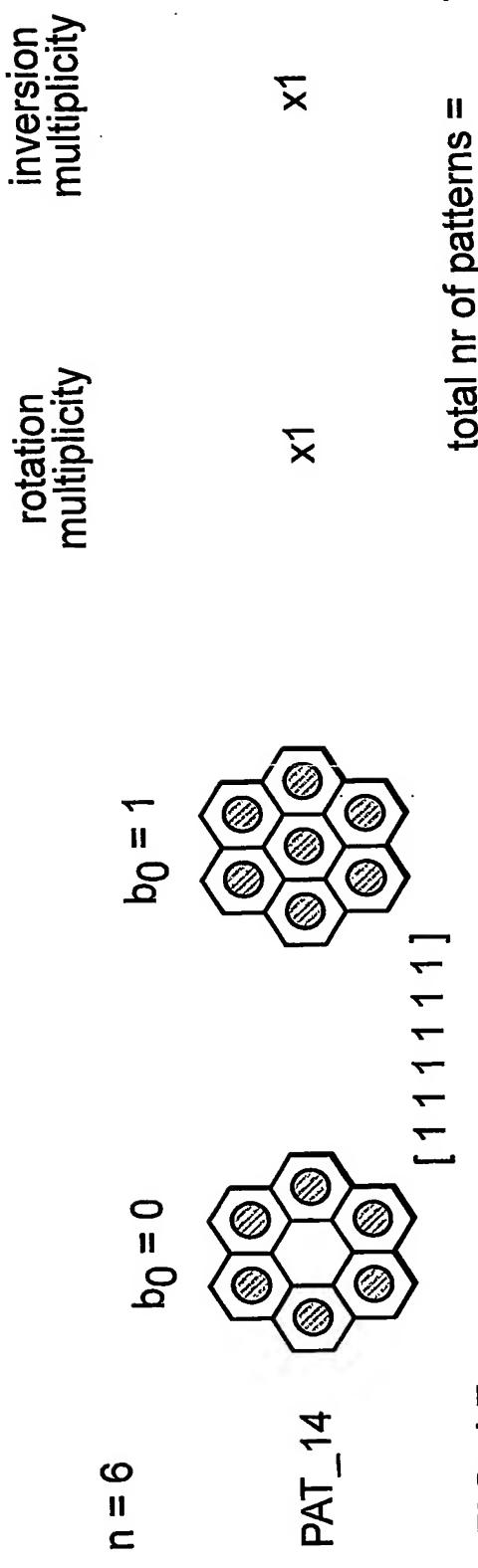


FIG.15

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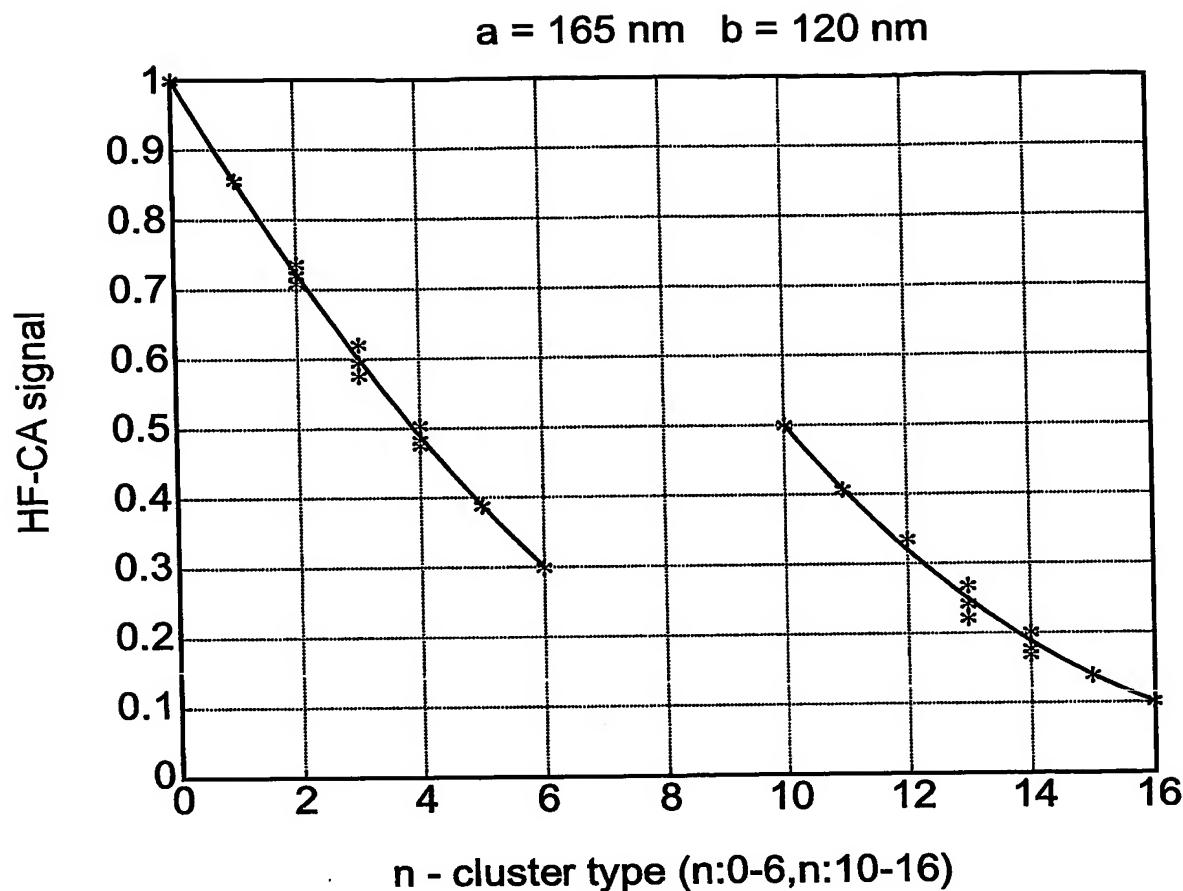


FIG.16

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CA-Signals

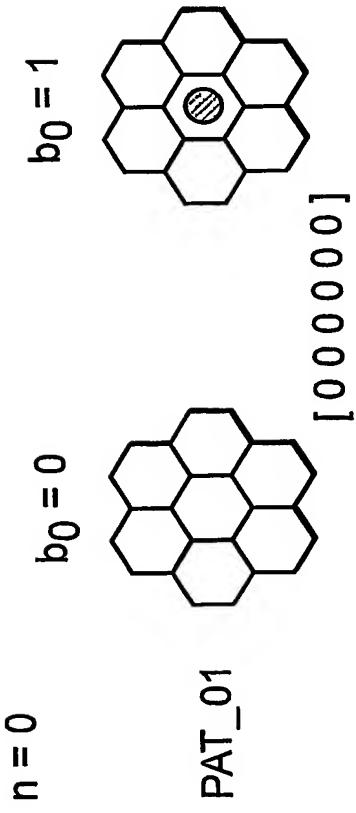


FIG. 17

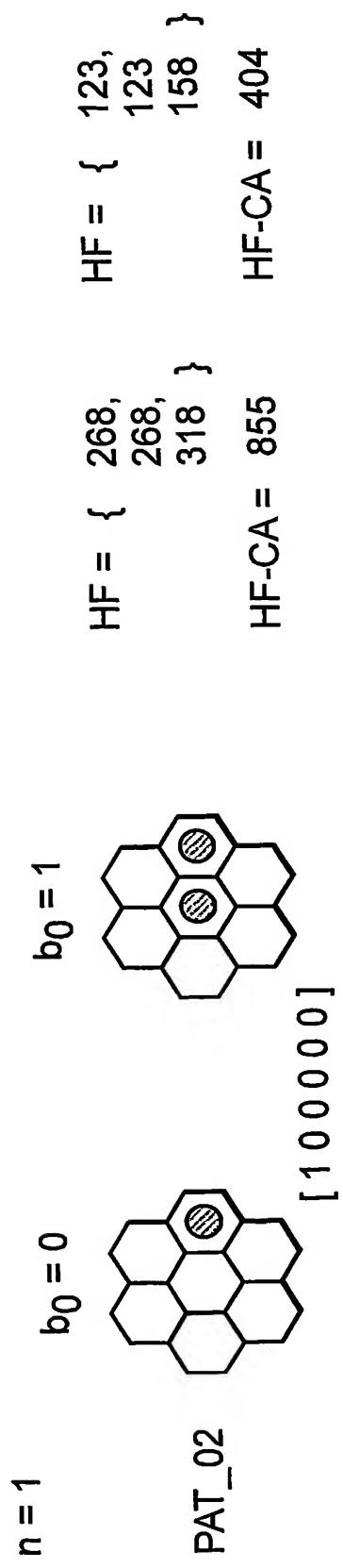
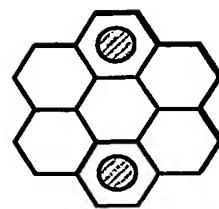


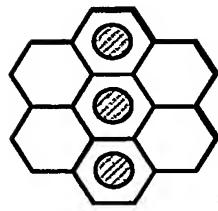
FIG. 18

CA-Signals

 $n = 2$ $b_0 = 0$ 

PAT_03

[1 0 0 1 0 0]

 $b_0 = 1$ 

HF-CA = 707

PAT_04

[1 0 1 0 0 0]

$b_0 = 0$

$HF = \{ 206, 206, 294 \}$

$HF = \{ 082, 082, 141 \}$

$HF = \{ 214, 249, 249 \}$

$HF = \{ 090, 111, 111 \}$

$HF-CA = 713$

$HF-CA = 311$

PAT_05

[1 1 0 0 0 0]

HF-CA = 306

$HF = \{ 264, 207, 264 \}$

$HF = \{ 126, 083, 126 \}$

$HF-CA = 735$

$HF-CA = 334$

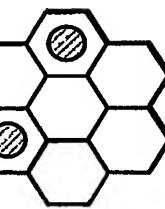
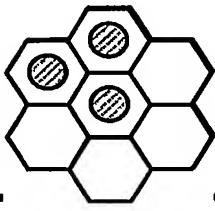
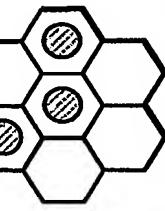
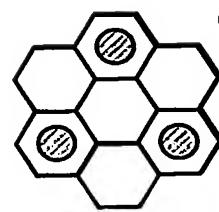


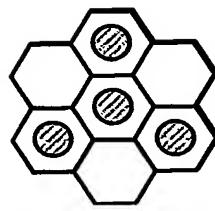
FIG. 19

CA-Signals

 $n = 3$ $b_0 = 0$ 

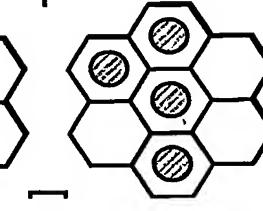
[1 0 1 0 1 0]

PAT_06

 $b_0 = 1$ 

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PAT_07



[1 1 1 0 0 0]

PAT_08

HF = { 191, 191, 192 }	HF = { 074, 074, 074 }
HF-CA = 574	HF-CA = 223
HF = { 221, 198, 199 }	HF = { 104, 081, 081 }
HF-CA = 618	HF-CA = 267
HF = { 198, 156, 236 }	HF = { 081, 054, 105 }
HF-CA = 591	HF-CA = 240
HF = { 237, 156, 198 }	HF = { 105, 054, 081 }
HF-CA = 591	HF-CA = 240

FIG.20

n = 4

$$= 0$$

110

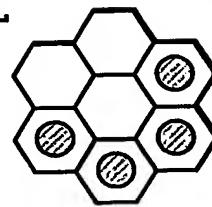
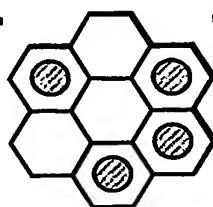
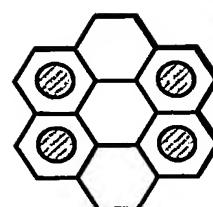
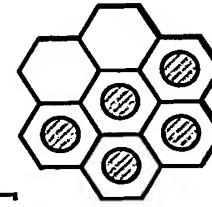
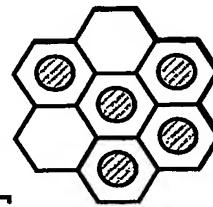
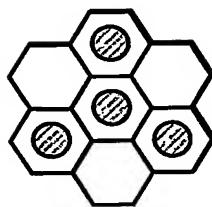
CA-Signals

$$HF = \{ 181, 181, 110 \} \quad HF = \{ 072, 072, 029 \}$$

$$\frac{HF-CA = 473}{HF = \{ 190, 130, 100, 80, 60, 40, 20, 10 \}} \quad HF-CA = 172$$

$$\frac{\text{HF-CA} = 478}{\text{HF} = \{ 159, 182, 160 \}} \quad \frac{\text{HF-CA} = 176}{\text{HF} = \{ 063, 072, 064 \}}$$

$$\text{HF-CA} = 501 \quad \text{HF-CA} = 199$$



PAT 10

PAT 11

PAT 12

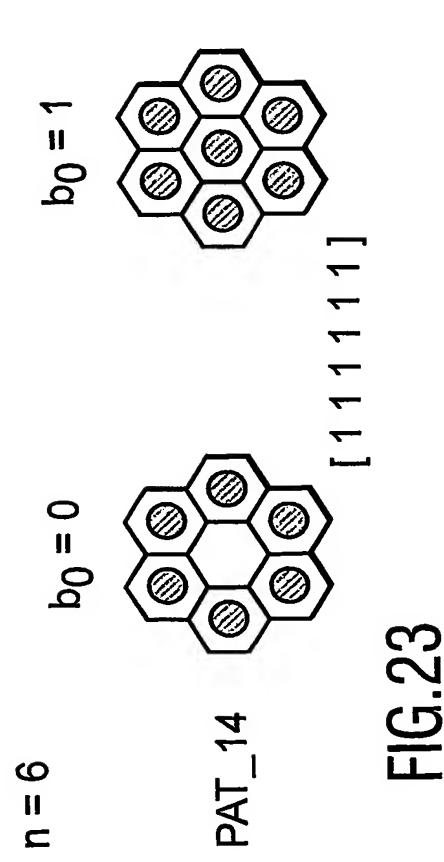
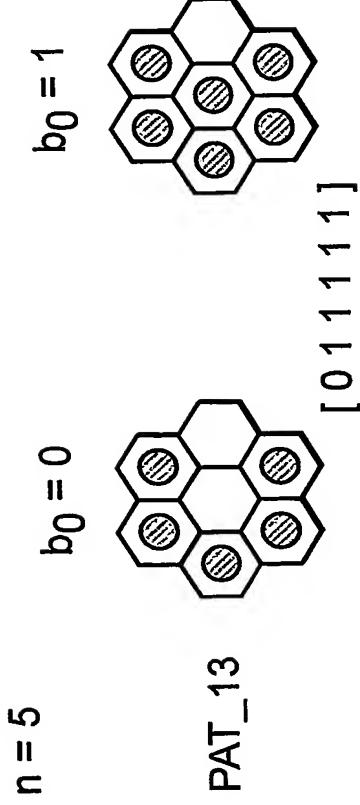
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FIG. 21

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CA-Signals



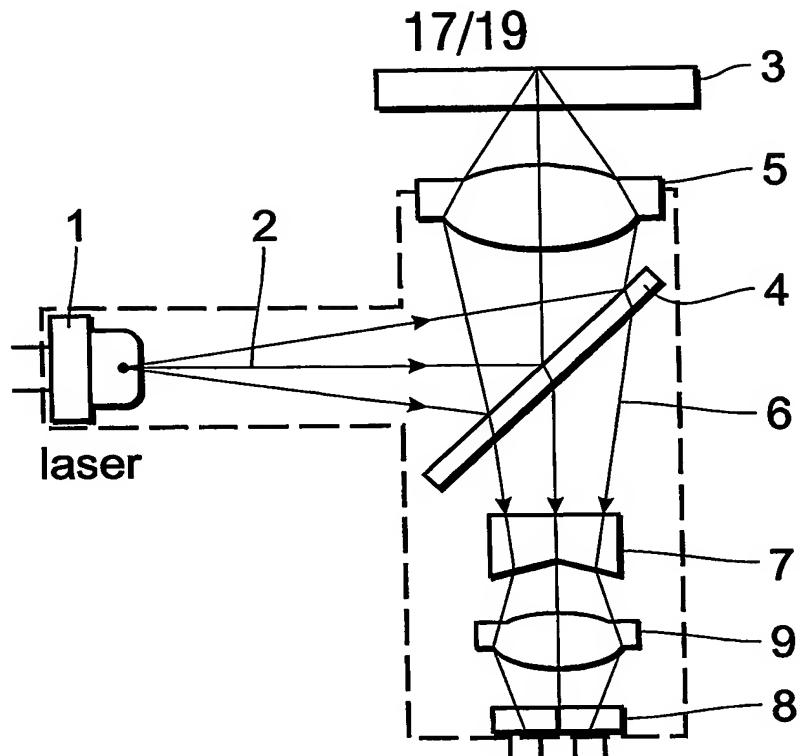


FIG.24

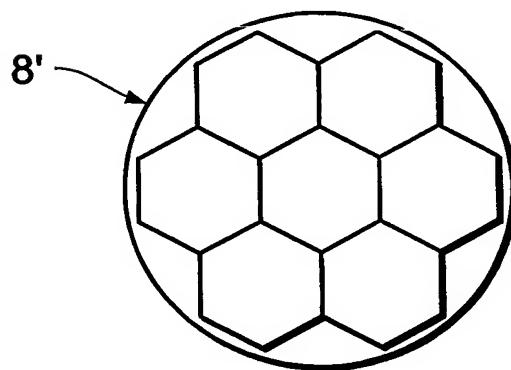


FIG.25

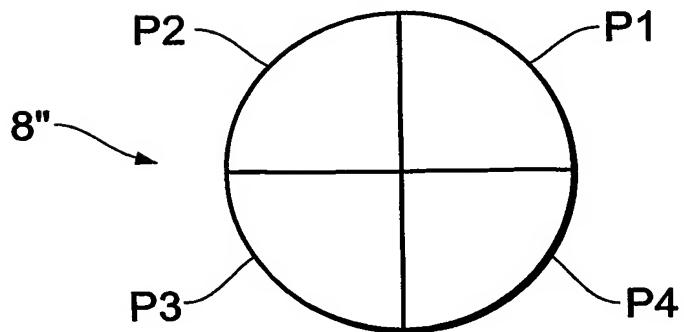


FIG.26

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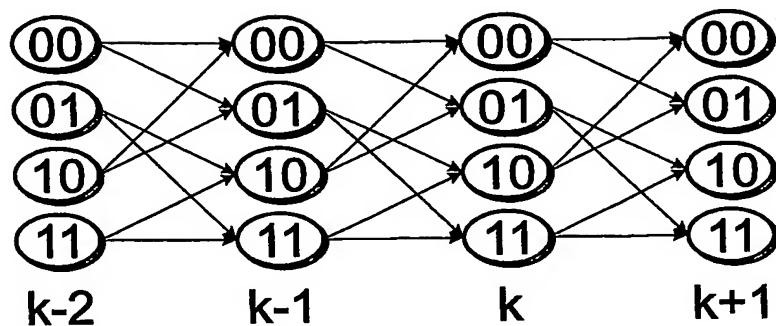


FIG. 27

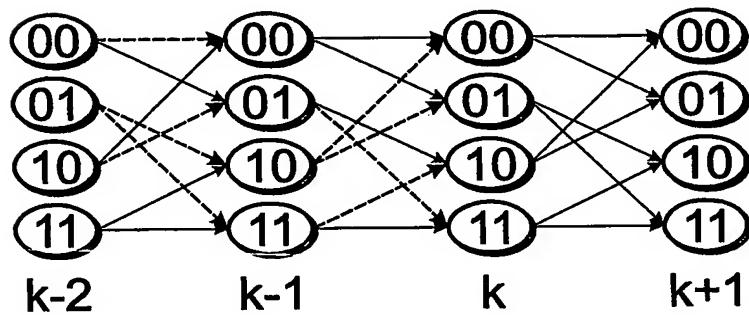


FIG. 28

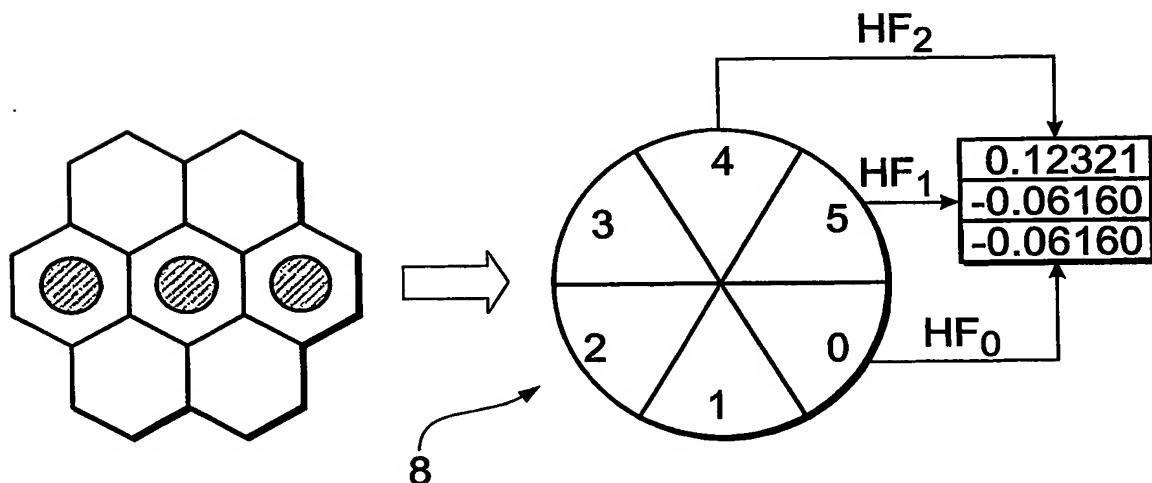


FIG. 29

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Class #	Central Bit	# outer bits	pattern description	# members	Vector Components			Threshold
					1	2	3	
000	0	0	000	1	0.00	0.00	0.00	1.00
001	0	1	001,100	6	0.10	-0.05	-0.05	0.09
002	0	2	100+1	12	0.06	0.06	-0.12	0.74
003	0	2	101	3	0.18	-0.09	-0.09	0.71
004	0	3	100+1+1	8	0.04	-0.02	-0.02	0.62
005	0	3	101+1	12	0.13	0.01	-0.14	0.59
006	0	4	101+2	6	0.05	-0.02	-0.02	0.50
007	0	4	101+1+1	6	0.09	-0.04	-0.05	0.48
008	0	4	101+101	3	0.09	0.07	-0.16	0.18
009	0	5	101+2+1	6	0.04	0.03	-0.06	0.39
010	0	6	101+2+2	1	0.00	0.00	0.00	0.30
100	1	0	010	1	0.00	0.00	0.00	0.50
101	1	1	110,011	6	0.08	-0.04	-0.04	0.40
102	1	2	110+1	12	0.05	0.04	-0.09	0.33
103	1	2	111	3	0.12	-0.06	-0.06	0.31
104	1	3	110+1+1	8	0.04	-0.02	-0.02	0.27
105	1	3	111+1	12	0.08	0.02	-0.09	0.24
106	1	4	111+2	6	0.02	-0.01	-0.01	0.20
107	1	4	111+1+1	6	0.06	-0.03	-0.03	0.18
108	1	4	111+111	3	0.05	0.05	-0.10	0.17
109	1	5	111+2+1	6	0.02	0.02	-0.03	0.14
110	1	6	111+2+2	1	0.00	0.00	0.00	0.10

FIG. 30